Up To Date

NASA IV&V Facility Educator Resource Center Newsletter

March, 2009

Volume 1, Issue 8

NASA IV&V Facility ERC

Featured Implementer: Linda Newcome

Mrs. Newcome's 6th grade students at Aurora School, Preston County, had 3 days to conquer the battle of the robots.

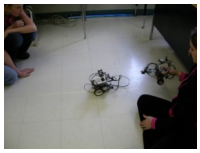
After approaching her principal, and explaining what students would learn by programming the robots (math, critical thinking, and difficult problem solving), they took three afternoons to GET 'ER DONE.

Mrs. Newcome watched in awe as students worked quietly and diligently to program, test, reprogram, and test some more to solve the course she designed.

Programming the robots to complete a square was more difficult and students had to really work to get the task accomplished.

Thank you Marcie and NASA IV& V Facility ERC for the training you provided in robotics and the use of the kit!

Author: Linda Newcome



NASA Update: Orbiting Carbon Observatory

NASA's Orbiting Carbon Observatory and its Taurus booster lift off from Vandenberg Air Force Base. Image credit: Orbital Sciences Corporation

NASA's Orbiting Carbon Observatory satellite failed to reach orbit after its 4:55 a.m. EST liftoff Feb. 24 from California's Vanderberg Air Force Base.

Preliminary indications are that the fairing on the Taurus XL launch vehicle failed to separate. The fairing is a clamshell structure that encapsulates the satellite as it travels through the atmosphere.

The spacecraft did not reach orbit and likely landed in the ocean near Antarctica.

The Orbiting Carbon Observatory (OCO) was the latest mission in NASA's ongoing study of the global carbon cycle. It was planned to be the first spacecraft dedicated to studying atmospheric carbon dioxide, the most significant human-produced greenhouse gas and the principal human-produced driver of climate change.

It would have measured atmospheric carbon dioxide concentration from space, mapping the globe once every 16 days and collecting about 8,000,000 measurements.

The OCO would have provided the first complete picture of the regional-scale geographic distribution and seasonal variations of both human and natural sources of carbon dioxide emissions and their sinks—the reservoirs that pull carbon dioxide out of the atmosphere and store it.

It was planned that the mission data would be used by the atmospheric and carbon cycle science communities to improve global carbon cycle models, reduce uncertainties in forecasts of how much carbon dioxide is in the atmosphere, and make more accurate predictions of global climate change.

Scientists monitor carbon dioxide concentrations using a ground-based network consisting of about 100 sites all over the world. But the current network does not have the spatial coverage, resolution or sampling rates necessary to identify the natural sinks responsible for absorbing carbon dioxide or the processes that control how the efficiency of those sinks changes from year to year.

Inside:

Important Dates:

Under Review STS 119 Launch

March 5 Kepler Launch

March 10 Sun Earth Connections **Workshop at ERC**

March 14 Energy Series: Wind **Workshop at ERC**

March 20 Sun Earth Day

March 20-21 West Virginia Council of Teachers of Mathematics Conference

March 25 Making the Invisible Detectable **Workshop at ERC**

March 26-28 West Virginia Environmental Education Association Conference

April 1 Launch of STSS Demonstrators Program—Missile Defense Agency

Upcoming Workshops: NASA IV&V Facility ERC

March 10, 6:00-8:00 **Sun Earth Connections** for educators of grades 3-8. Make connections between the Sun and Earth, including space weather and auroras. This workshop has several great freebies to go along with it from NASA! Registration open until March 6!

March 14, 10:00-3:00 **Energy Series: Wind** for educators of grades 5-12. This workshop is based on materials and teacher/student guides for NEED (www.need.org) and will give you activities from the Kid Wind Project to dispel myths about wind energy and electricity.

March 25, 6:00-8:00 **Making the Invisible Detectable** for educators of grades 5-12. This workshop includes investigations to detect invisible wavelengths of light! Become certified to sign out our educator kit to explore the electromagnetic spectrum in this workshop.

April Workshops:

21 Understanding Flight, grades 3-8, 6:00-8:00

25 Robotics, grades 3-12, 10:00-4:00

29 Engineering Design Challenge: Thermal Protection System, grade 5-12, 6:00-8:00

Don't' Forget to Register at least one week in advance!

STS-119 Resources for Educators Page

Great resources to help you promote the upcoming launch in your classroom! http://www.nasa.gov/audience/foreducators/sts119-index.html

Featured NASA IV&V Equipment Loan Kit: Environmental Probeware, GPS, and GIS

Imagine being able to collect air and water temperature, dissolved oxygen, conductivity, pH, barometric pressure, relative humidity, AND latitude, longitude, and elevation simultaneously...

Now picture your students transferring the data they collected to a Geographic Information System (GIS) application designed specifically for use in K-12 settings with a few simple clicks.

Sound too easy, or too good to be true?

Join us for a HANDS-ON session where you will get to use and become certified to borrow the latest NASA IV&V Facility ERC Equipment Loan Kit of Pasco Probeware, Water, Air, and GPS probes, and My World GIS. You will receive free handouts, posters, My World CD and more! Interested? Contact Todd at todd.ensign@ivv.nasa.gov or 304-367-8438 to schedule a workshop so you too can become certified to use this kit in your educational setting.

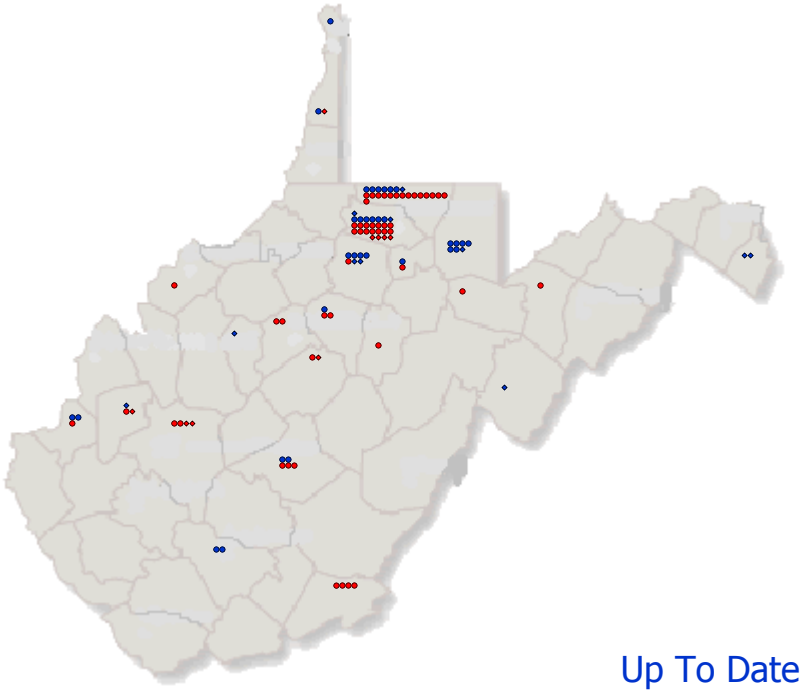
NASA Aware: *Lunar Toolkit Exploration*

Attention West Virginia **Educators of Grades 3-8**! Join us for ***NASA Aware: Lunar Toolkit Exploration*** June 22-26, 2009 in Fairmont, WV!

The NASA IV&V Facility ERC in conjunction with Fairmont State University is offering a week long professional development experience for educators. Participants will receive 3 hours graduate credit from FSU, $500 stipend, accommodations for commuting and residential participants. Please contact Marcie at marcie.raol@ivv.nasa.gov or 304-367-8436 for more information.

Where in WV is the NASA IV&V

- ♦ **February Equipment Loan**
- ♦ **February Workshops**
- ♦ **February Video Conferencing**
- • **2008-2009 Equipment Loan**
- • **2008-2009 Workshop**
- • **2008-2009 Video Conferencing**



Don't forget Sun Earth Day
http://sunearthday.nasa.gov
March 20

Name Node 3!

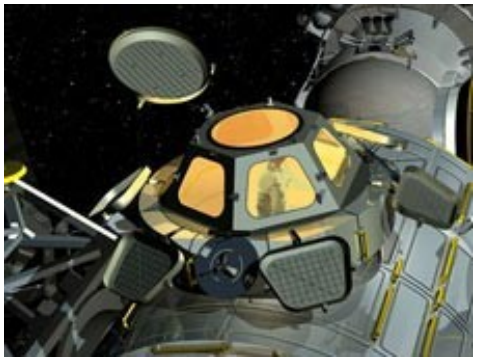
NASA is asking the public to help name the International Space Station's (ISS) next module—a control tower for robotics in space and an observation deck.

Node 3 module will provide room for many of the station's life support systems. Attached to the node is the cupola, a one-of-a-kind work station with six windows around the sides and on the top. The cupola will contain a robotics workstation from which astronauts will be able to control the station's 57-foot robotic arm.

Individuals can vote for the module's name online, choosing one of four NASA suggestions — Earthrise, Legacy, Serenity or Venture — or writing in a name. Submissions will be accepted through March 20. The name should reflect the spirit of exploration and cooperation embodied by the ISS and follow in the tradition set by Node 1, named "Unity," and Node 2 named "Harmony."

The winning name will be announced at the Node 3 unveiling April 28 at NASA's Kennedy space Center in Florida. The node is scheduled to arrive at Kennedy April 20 and is targeted for launch in late 2009.

For more information and pictures or to submit a name for the node, visit: http://www.nasa.gov/namenode3



Artist's conception of Cupola mounted on the ISS. Image credit: NASA

Featured STEM Career: NASA Astronaut

Joseph Acaba, NASA photo

Joseph Acaba was born in 1967 in Inglewood, CA and was raised in Anaheim, CA. He has received his B.S. and M.S. in Geology.

Previously he has worked as a hydro-geologist, in the US Peace Corps as an Environmental Education Awareness Promoter, as the Island Manager of the Caribbean Marine Research Center, Shoreline Revegetation Coordinator, High school teacher, and middle school teacher.

After being selected as a Mission Specialist by NASA in 2004, Acaba completed Astronaut Candidate Training which includes scientific and technical briefings, intensive instruction in Shuttle and International Space Station systems, physiological training, T-38 flight training, and water and wilderness survival training. He was then assigned to the Hardware Integration Team in the Space Station Branch working technical issues with the European Space Agency hardware. Currently he is assigned as mission specialist on the STS-119 Mission. This mission will launch soon and will deliver the final pair of power-generating solar array wings and truss element to the International Space Station.

Read complete article at www.jsc.nasa.gov/Bios/htmlbios/acaba-jm.html

Acaba is part of the STS 119 Mission, launching soon!

Featured NASA Product: NASA eClips™

Grade K-5	Grade 6-8	Grade 9-12	General public
Elementary students learn more about **Our World** through the power of video segments.	Middle school students explore mathematics in action through **Real World: Mathematics.**	High school students ignite their interest in science and engineering through NASA innovations in **Launchpad.**	The public gets an inside look at NASA's current research and projects through this magazine-style program.

NASA eClips™ are short relevant educational video segments. These videos inspire and engage students, helping them see real world connections. New video segments are produced weekly exploring current applications of science, technology, engineering and mathematics (STEM) topics. The programs are produced for targeted audiences, K-5, 6-8, 9-12 and the general public.

Visit www.nasa.gov/audience/foreducators/nasaeclips/index.html to view.

Free Web Seminars

Visit http://dln.nasa.gov/dln/content/webcast on **March 25 for Kepler Mission**, 4:00-5:00 p.m.

Visit http://learningcenter.nsta.org/products/webseminars.aspx to register for the following NSTA Web Seminars

March 25 Energy: Stop Faking It! Presented by Bill Robertson, 6:30-8:00 p.m.

March 26 Biomedicine, Genetic Testing, and Bioethics presented by NIH Presenting Team, 6:30-8:00 p.m.

March 31 Climate Change presented by Sally Ride Science, NOAA, and U.S. Forest Service Presenting, 6:30-8:00 p.m.

April 1 FDA Science presented by the FDA presenting team, 6:30-8:00 p.m.

April 2 Coral Ecosystems and Climate Change presented by Dr. Dwight Gledhill, 6:30-8:00 p.m.

NASA IV&V Facility ERC

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We're on the web!

http://erc.ivv.nasa.gov

Submit story ideas and pictures to marcie.raol@ivv.nasa.gov

The NASA Independent Verification and Validation Facility Educator Resource Center's goal is to serve teachers, informal educators, and preservice teaches to enable them to reach their goals. Through a grant with Fairmont State University, the NASA IV&V Facility ERC provides materials, equipment for loan, and professional development workshops both at the facility and around the state of West Virginia (scheduled upon request) for educators that reflect NASA's current research and technology.

FAIRMONT STATE UNIVERSITY

NASA

Independent Verification & Validation Facility

GIS in WV Education

A geographic information system (GIS) captures, stores, analyzes, manages, and presents data that refers to or is linked to location. GIS can help students understand the world around them by actively involving them in studies that promote critical thinking, integrated learning, and multiple intelligences, at any grade level. Teachers are using GIS to increase student engagement and comprehension in Environmental Education, Social Studies, History and much more. Unlike a static map, GIS allows the student to answer questions about a location such as, "where?", "why?", and "what if?" by manipulating layers of information such as addresses, aerial photographs, satellite images, stream-flow levels, and other student-collected data.

In 2005 West Virginia became the second state to implement the Partnership's 21st century model for teaching and learning which emphasizes information and communications technology literacy, critical thinking, communication skills, global awareness, and business, economic and civic literacy. GIS may be the single greatest tool which integrates all of the above skills and enables WV students to become actively engaged in the globally connected world they now live in.

As we move forward as a state, many questions arise including which GIS platform is the best choice for our schools? Where will the maps and data come from? Who will provide teacher training? What is the cost to the school, county or state? Where does GIS fit into our WV Content Standards and Objectives?

Please join us for a panel discussion at this year's West Virginia Environmental Education Association annual meeting (www.wveea.org), March 26-28, where a group of education and GIS experts will share their experiences using GIS in education, answer questions about integrating GIS in K-12 education, and strategize how we can move forward and coordinate coordinated in West Virginia.

Panel members include:
Robin Anglin, Science Coordinator, West Virginia Department of Education
Cassie Doty, Education Coordinator, Appalachian Laboratory Environmental Science Education (ALESE) University of Maryland Center for Environmental Science
Kevin Kuhn, Geographic Information Specialist, WV GIS Technical Center, West Virginia University
Dr. Rick Landenberger, Executive Director, AmericaView, West Virginia University
Regina Scotchie, Social Studies Coordinator, West Virginia Department of Education

Moderator: **Todd Ensign**, Program Manager, NASA IV&V Facility Educator Resource Center